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TECHNICAL REPORT R-3 77-12

SIMULATED YIELD TABLES FOR DWARF MISTLETOE MANAGEMENT IN PONDEROSA PINE STANDS (SWYLD2 PROGRAM)

PHASE I. TWO-STORIED STANDS

Cuba and Jemez Ranger Districts
Santa Fe National Forest
New Mexico

1977

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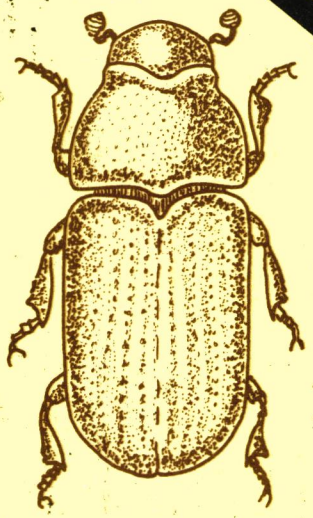

Southwestern Region

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INTRODUCTION

Southwestern dwarf mistletoe (Arceuthobium vaginatum subsp. cryptopodum) is the most destructive forest disease in the Southwest. This disease causes growth loss, mortality, deformity, and reduced seed production in infected trees. Timber volume yield is reduced proportionate to the level of mistletoe infestation in a stand. Volume loss in an infested stand may be 10 to 40 percent or more over a rotation. Silvicultural control of dwarf mistletoe is the most efficient method of reducing adverse effects caused by this disease. Removal of mistletoe-infected trees during precommercial and commercial thinning operations is an efficient way to suppress a dwarf mistletoe infestation.

Timber volume loss resulting from a dwarf mistletoe infestation is difficult to assess by direct observation. The effectiveness of silvicultural treatments that reduce mistletoe levels is variable. Researchers have developed a simulated yield program (SWYLD2) that will aid land managers in assessing these problems (Myers, Edminister, and Hawksworth 1976). The SWYLD2 program is designed for use in even-aged or two-storied stands of ponderosa pine. Stands may be either dwarf mistletoe-infested or non-infested. Yield tables generated by the SWYLD2 program help the land manager evaluate management alternatives through examination of simulated yields produced under selected options.

The SWYLD2 program is being evaluated for implementation in the Southwestern Region. Areas were selected in various parts of the Region for development of simulated yield tables for mistletoe infested stands. The program for implementation of SWYLD2 consists of three phases: I. Development of yield tables for selected stands infested with dwarf mistletoe, II. Evaluation of these stands managed with the aid of SWYLD2 simulations, and III. Implementation of SWYLD2 as a tool in developing timber management programs in mistletoe-infected stands in Region 3. This report is one of a series to be issued during the implementation process.

OBJECTIVE

The purpose of this project was to develop simulated yield tables for two-storied, dwarf mistletoe-infested ponderosa pine stands on Cuba and Jemez Ranger Districts, Santa Fe National Forest. This report summarizes additional work in Phase I of the SWYLD2 implementation program on Cuba and Jemez Ranger Districts. Even-aged stands were sampled in 1975 on both Ranger Districts (Tech. Rep. R-3 76-21).

PROCEDURE

The following procedure constituted the two-storied portion of Phase I for this project:

1. Collect data necessary for input in the SWYLD2 program from two-storied, dwarf mistletoe-infested ponderosa pine stands.

2. Combine data with various management alternatives selected by the land manager and produce simultated yield tables for the sampled areas.

3. Assist the land manager in interpreting yield tables and selecting the best combination of management alternatives in dwarf mistletoe-infested stands.

4. Assist the land manager in planning implementation of selected management alternatives.

METHODS

Three areas of two-storied ponderosa pine infested with dwarf mistletoe were sampled in 1976 by personnel from the Forest Insect and Disease Management Staff Unit. Two areas were located on the Jemez Ranger District and one area was on the Cuba Ranger District, Santa Fe National Forest.

Sampling Procedure

1. A road log was made from the nearest town to the survey area.

2. A map of the area was obtained and the boundary marked when necessary.

3. Age (at d.b.h.) and height measurements were taken on at least 10 codominant or dominant ponderosa pine trees in each of the two stories.

4. Age and height measurements were taken on 6 to 10 dominant ponderosa pines for determination of site index. Number of sample trees taken was dependent on size of the area.

5. Sample points were located on an 8-chain grid pattern throughout the area; a .01-acre circular plot was established at each sample point; presence or absence of dwarf mistletoe and d.b.h. were recorded for all live trees 4.5 feet or more in height and less than 6 inches d.b.h.; at the same sample point, a 10 BAF variable-size plot was established; the same variables as in the fixed plot were recorded for live trees 6 inches or greater d.b.h.; in addition, all trees marked for cut in an upcoming timber sale were noted (Jemez RD, Stand I only); data were recorded on automatic data processing forms.

6. Survey data were processed through the NSEC/VI computer program, which summarized field data and provided per-acre estimates of number of trees, basal area, and percent of trees infected with dwarf mistletoe by 1-inch diameter classes; site index, mean d.b.h. of the tree of average basal area, average age, and average height were also

calculated from the data. Information on trees marked for cut was summarized also. The summarized data were combined with management alternatives obtained from land managers and then processed through the simulated yield program SWYLD2.

RESULTS AND DISCUSSION

Cuba Ranger District (Archuleta)

A 652-acre area of two-storied ponderosa pine was sampled by collecting data on 102 plots. Location of the area is indicated in Figure 1. Line, plot, and dwarf mistletoe distribution are provided in Figure 2. Plots with dwarf mistletoe had a minimum of one infected sample tree. Dwarf mistletoe is distributed throughout the sampled area.

Survey Results Summary

	Overstory*	Understory**
Site index	70	70
Average age (years)	150	60
Average Height (feet)	67	31
Number trees/acre	44	417
Basal area/acre	44	24
Average d.b.h. (inches)	13.9	3.2
Percent trees infected with dwarf mistletoe	35	33

This basic stand information was combined with management alternatives selected by Ranger District personnel to produce 152 sets (set=1 overstory and 1 understory printout) of simulated yield tables. The yield tables were discussed and evaluated with personnel from Cuba Ranger District. Six yield tables were selected for use as examples in this report. The SWYLD2 program converts percent trees infected with mistletoe to stand DMR, based on the 6-class rating system. The stand DMR reflects average mistletoe rating for all trees in a sampled area.

Because overstory management alternatives were held constant, only one overstory simulation is presented (Table 1). About two-thirds of the overstory basal area was removed in the first cut, with the remainder being cut in 20 years (final removal). The first overstory cut simulated a logging from above, which reduced the dwarf mistletoe infestation to a low level (Table 1). The buildup of mistletoe in the 20 years before final removal resulted from latent infections in residual trees. Spread of dwarf mistletoe from infected residual overstory trees to understory is simulated for the 20-year period before final removal (Tables 1-6).

*Overstory = all live trees $\geq$ 9.0 inches d.b.h.
**Understory = all live trees $\geq$ 4.5 feet tall and $<$ 9.0 inches d.b.h.

All understory simulations were made to biological age 200 (Tables 2-6). The regeneration scheme was constant with a 2-cut shelterwood method being used. Regeneration cuts were made at age 180 (cut 60% of BA) and 200 (final removal). Various growing stock level (GSL) combinations were simulated for the initial thin and all subsequent intermediate cuts. A 10-year delay before the first stand entry was simulated (Tables 2, 5, & 6), as well as immediate entry in the stand (Tables 3 and 4). The initial entry in all understory simulations was a thinning from above, emphasizing removal of larger diameter trees.

The SWYLD2 program will not simulate intermediate cuts when stand DMR equals or exceeds 3.0 (Tables 2, 4, 5, & 6). The stand DMR of 3.0 indicates 86 percent of the trees are infected with dwarf mistletoe and the stand should be regenerated. The 10-year delay before initial stand entry resulted in a buildup of dwarf mistletoe which could not be controlled by subsequent intermediate cuts (Tables 2, 5, & 6). Tables 2 and 3 simulate the same management alternatives, with the exception of the 10-year delay before initial stand entry in Table 2. The delay allowed a buildup of dwarf mistletoe which resulted in total yields being reduced by 18,200 board feet (Table 2 vs. 3).

Various GSL combinations were tested, with an initial GSL 60 and subsequent GSL 90 producing the highest board-foot yield (Table 3). The importance of reducing mistletoe levels initially is exemplified by comparing Tables 3 and 4. The reduction in dwarf mistletoe levels appears to be similar in the initial thinning; however, latent infections and spread of mistletoe from overstory to understory were greater in Table 4 because more trees were left after thinning. Adequate reduction of mistletoe levels in the initial thinning and all subsequent stand entries resulted in control of dwarf mistletoe and an acceptable timber yield (Table 3). By close examination of the yield tables, land managers can select the combination of management alternatives that best meet current management objectives.

Jemez Ranger District

Two-storied stands of ponderosa pine were surveyed in two locations on the Jemez Ranger District in 1976. A 627-acre area and a 217-acre area were sampled by collecting data on 98 and 34 plots, respectively. Location of the areas is provided in Figure 3. Line, plot, and dwarf mistletoe distribution are presented in Figures 4 (Stand I) and 5 (Stand II). Plots with dwarf mistletoe had a minimum of one infected sample tree. Dwarf mistletoe is present in much of Stand I, except along the western edge of the area. In Stand II, mistletoe is only found in the western half of the area.

Survey Results Summary

Stand I Rivera	Overstory*	Understory**
Site index	87	87
Average age (years)	130	60
Average height (feet)	90	44
Number trees/acre	40	623
Basal area/acre	47	49
Average d.b.h. (inches)	14.6	3.8
Percent trees infected with dwarf mistletoe	28	28
Stand II		
Site index	76	76
Average age (years)	120	40
Average height (feet)	78	27
Number trees/acre	16	1609
Basal area/acre	24	50
Average d.b.h. (inches)	16.8	2.4
Percent trees infected with dwarf mistletoe	14	1

This basic stand information was combined with management alternatives selected by Ranger District personnel to produce 12 sets of yield tables for Stand I and 6 sets for Stand II. The yield tables were discussed and evaluated with personnel from Jemez Ranger District. Seven yield tables from Stand I were selected for use as examples in this report. Overstory management alternatives were constant; thus, only one overstory simulation is presented. About 30 percent of the overstory basal area was removed in the initial cut, with the remainder being cut in 20 years (Table 7). Spread of dwarf mistletoe from overstory to understory is simulated in the SWYLD2 program. Based on the sample of trees actually marked for cut in Stand I, the DMR will remain at .3 after the timber sale. Thus, the buildup of dwarf mistletoe in the overstory and spread of the disease into understory will be greater than that simulated in Tables 7-13.

Understory simulations were made to biological age 160. A 3-cut shelterwood method was simulated, with cuts at 120, 140, and 160 years. All management alternatives were constant, except thinning method and intensity. Thinnings were performed from above in the initial stand entry (Tables 9, 11, & 13), as well as from below (Tables 8, 10, & 12). Various GSL combinations were tested to determine which levels result in maximum volume production on the area.

*Overstory = all live trees ≥ 9.0 inches d.b.h.
**Understory - all live trees ≥ 4.5 feet tall and < 9.0 inches d.b.h.

Thinning from below resulted in higher overall board-foot yields than thinning from above (Tables 8, 10, & 12 vs. 9, 11, & 13). Dwarf mistletoe was controlled in all simulations; thus, variation in total yields resulted from altering initial and subsequent thinning levels. The combination of 90 GSL for initial and 100 GSL for subsequent thinnings resulted in the highest board-foot yield over a rotation (Table 10). Other combinations using a higher initial GSL (Table 12) or lower initial and subsequent GSL's (Table 8) resulted in lower overall yields. Simulated yield tables generated by the SWYLD2 program will aid land managers in selecting a combination of management alternatives that best meets current management objectives.

CONCLUSIONS AND RECOMMENDATIONS

Sufficient stand data were obtained on Cuba and Jemez Ranger Districts for use in the simulated yield program SWYLD2. The data were combined with various management alternatives selected by Ranger District personnel, and yield tables were produced for each sample area. Examination of yield tables by the land manager and personnel from Forest Insect and Disease Management revealed several important factors: (1) volume losses caused by dwarf mistletoe can be substantial when infested stands are improperly treated (FSM 5200); (2) control of dwarf mistletoe is dependent on management alternatives selected for use in a particular area; (3) total volume production per acre is dependent on management alternatives selected for use in a particular area.

The simulated yield program SWYLD2 is a useful tool for land managers. The limits of the program will be revealed after on-the-ground situations, in which simulated yield information has been used, are compared with their simulated yields. Based on results of this report, the following plan of action is recommended for the areas sampled on Cuba and Jemez Ranger Districts:

1. Select the yield table and accompanying management alternatives that best meet current management objectives, while reducing dwarf mistletoe to acceptable levels (FSM 5260).

2. Implement management alternatives selected for the first stand entry in the overstory and understory.

3. With the assistance of personnel from the Forest Insect and Disease Management Staff Unit, complete a post-treatment evaluation of the area.

4. Compare results of the post-treatment evaluation with simulated yield predictions (Phase II).

The growing stock levels used to generate yield tables for stands considered in this report are not intended as "best" growing stock levels for widespread use; however, they demonstrate the need for case-by-case selection of a suitable level based on the manager's objectives in conjunction with mistletoe management.

Instructions for use of the SWYLD2 program and detailed descriptions of management alternatives are provided by Edminster and Hawksworth (1976). Additional information on the SWYLD2 program, relative to dwarf mistletoe management, may be obtained by contacting Forest Insect and Disease Management. For general information on the SWYLD2 program, contact Forest Insect and Disease Management or Timber Management.

LITERATURE CITED

Edminster, C. B., and F. G. Hawksworth. 1976. User's guide to SWYLD2: Yield tables for even-aged and two-storied stands of southwestern ponderosa pine, including effects of dwarf mistletoe. USDA Forest Serv. Gen. Tech. Rep. RM-23. 8 pp.

Myers, C. A., C. B. Edminster, and F. G. Hawksworth. 1976. SWYLD2: Yield tables for even-aged and two-storied stands of southwestern ponderosa pine, including effects of dwarf mistletoe. USDA Forest Serv. Res. Pap. RM-163. 25 pp.

Walters, J. W., and B. W. Geils. 1976. Simulated yield tables for dwarf mistletoe management in ponderosa pine stands (SWYLD2 program). Tech. Rep. R-3 76-21. 22 pp.

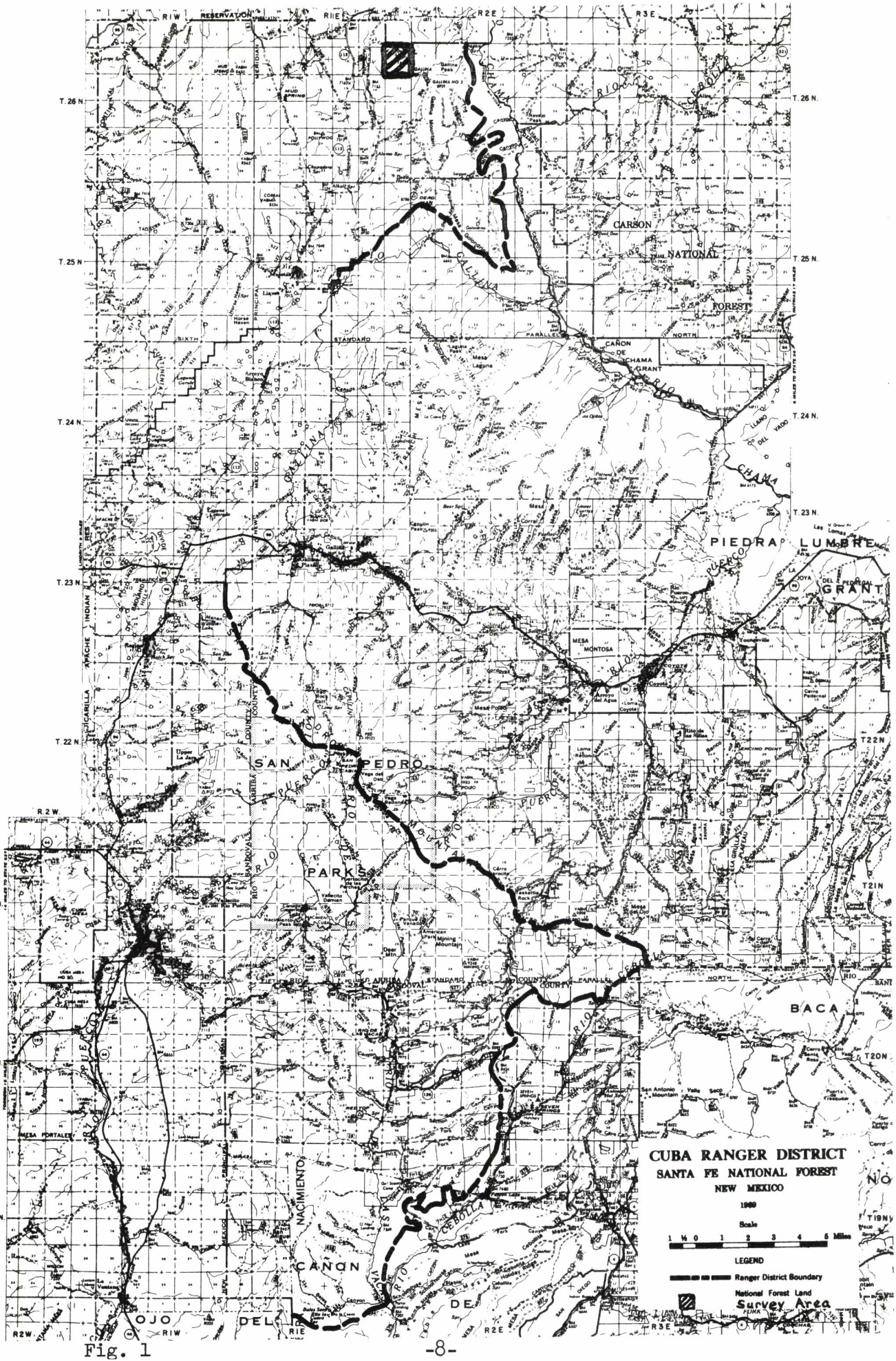
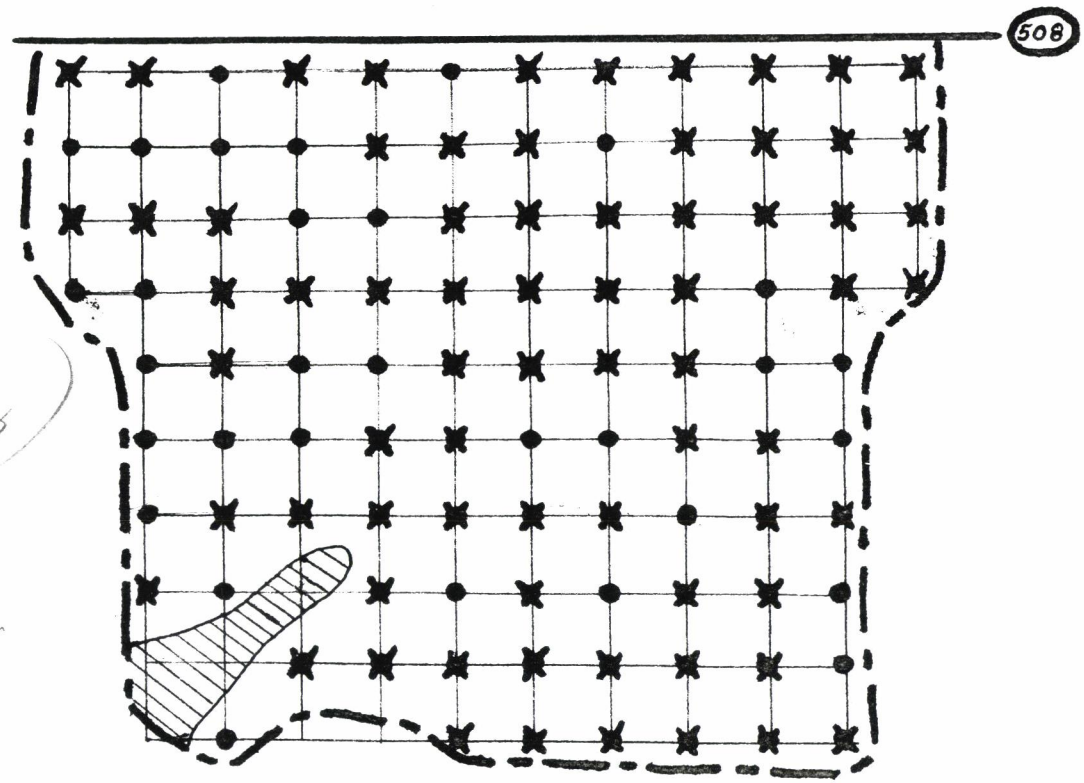

CUBA RANGER DISTRICT
SANTA FE NATIONAL FOREST
NEW MEXICO
1980
Scale
1 ½ 0 1 2 3 4 5 Miles
LEGEND
Ranger District Boundary
National Forest Land
Survey Area
CARSON
NATIONAL
FOREST
PIEDRA LUMBRE
GRANT
SAN PEDRO
PARKS
BACA
CAÑON DE CHAMA GRANT
MESA MONTOSA
CAÑON DE VACA
OJO DEL
NACIMIENTO
MESA PORTALES
T. 26 N.
T. 25 N.
T. 24 N.
T. 23 N.
T. 22 N.
T. 21 N.
T. 20 N.
T. 19 N.
R2W.
R1E
R2E
R3E

Fig. 1



LEGEND

- Plots with dwarf mistletoe
- Plots with no dwarf mistletoe
- Non-type area
- Survey area boundary
- Forest road and boundary

102 plots
652 acres

Scale: 1 cm = 8 chains

Fig. 2.--Line and plot distribution with an indication of dwarf mistletoe presence or absence; Cuba Ranger District, T26N, R1E, Sec. 12.

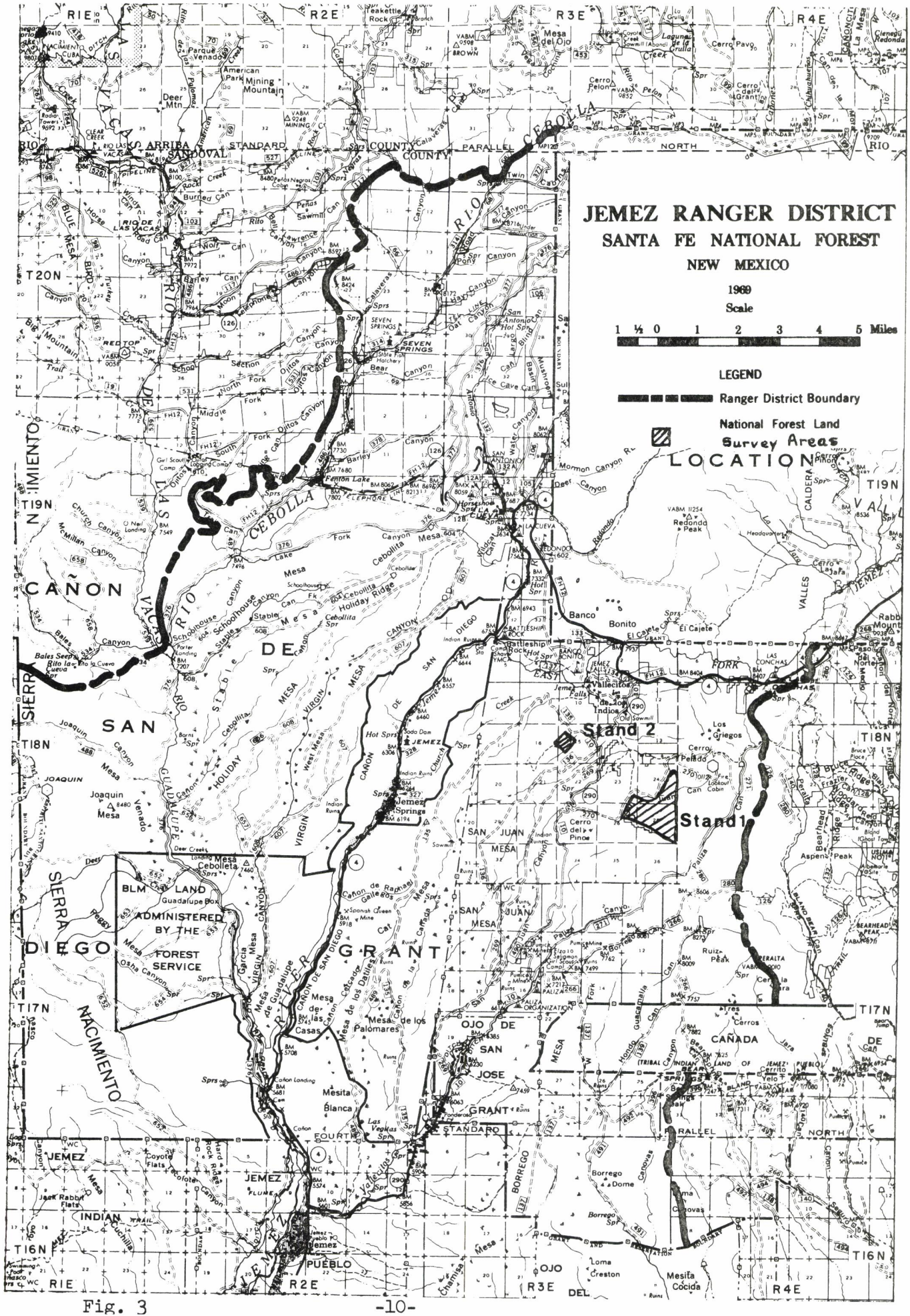

JEMEZ RANGER DISTRICT
SANTA FE NATIONAL FOREST
NEW MEXICO
1969
Scale
1 ½ 0 1 2 3 4 5 Miles
LEGEND
Ranger District Boundary
National Forest Land
Survey Areas
LOCATION
Stand 1
Stand 2
BLM LAND ADMINISTERED BY THE FOREST SERVICE
SANDOVAL COUNTY
RIO ARRIBA COUNTY
STANDARD PARALLEL NORTH
SIERRA NACIMIENTO
SAN PEDRO PARKS
CAÑON DE VALLES
JEMEZ SPRINGS
SEVEN SPRINGS
LA CUEVA
BANCO BONITO
VALLECITOS
OJO DE LA CASA
OJO SAN JOSE
MESITA BLANCA
MESA DE LOS PALOMARES
MESA DE LAS CASAS
CAÑON DE SAN DIEGO
CAÑON DE RAMON GALLEGOS
SPANISH QUEEN MINE
JEMEZ PUEBLO
CAÑADA DE JEMEZ
INDIAN TRIBAL LAND OF JEMEZ PUEBLO
BEARHEAD PEAK
REDONDO PEAK
RABBIT MOUNTAIN
T20N
T19N
T18N
T17N
T16N
R1E
R2E
R3E
R4E

Fig. 3

98 plots
627 acres

Scale: 1 cm = 8 chains

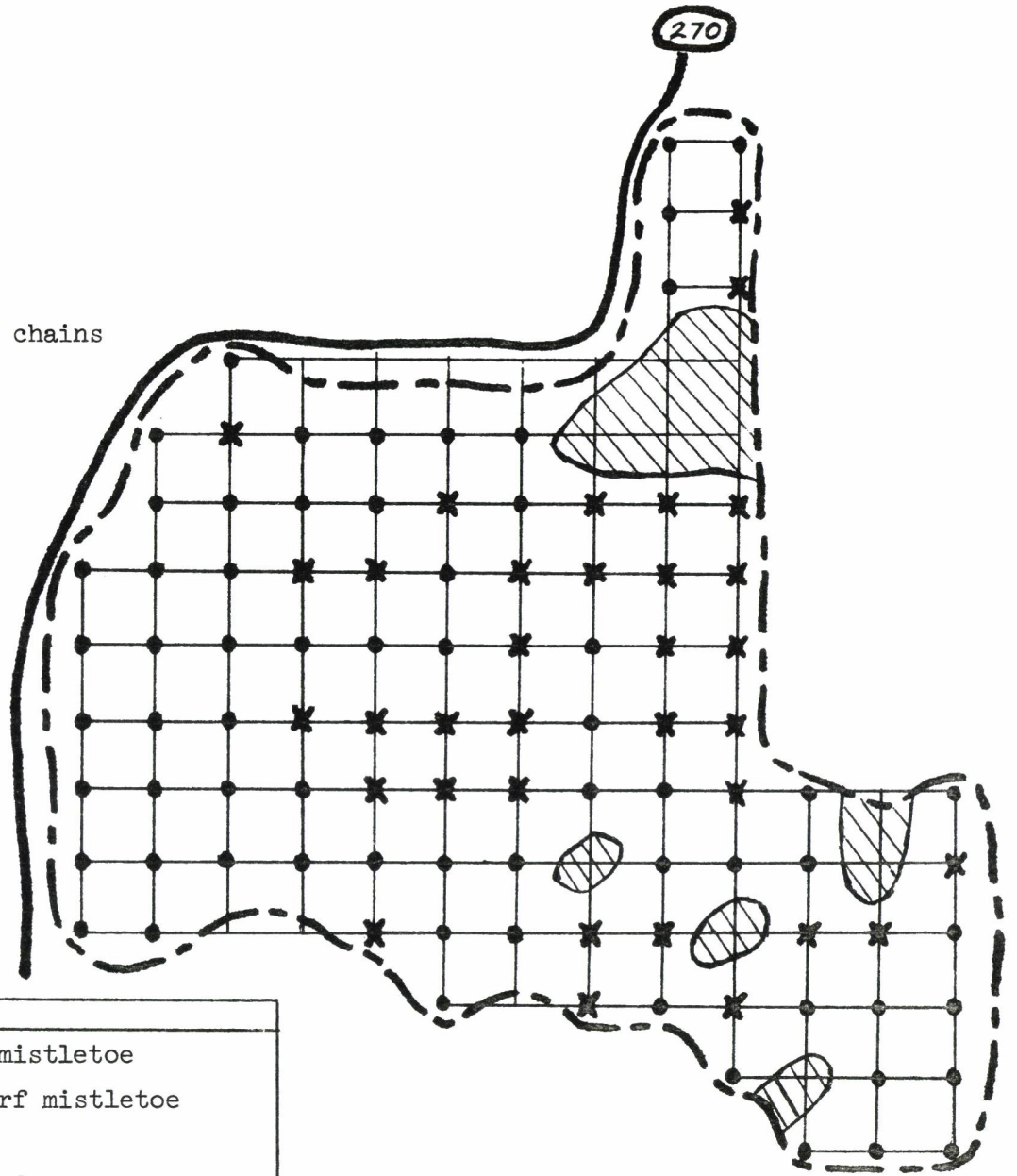


Fig. 4.--Line and plot distribution with an indication of dwarf mistletoe presence or absence; Jemez Ranger District; T18N, R3E, Sec. 24, 25, & 26; Stand I. Rivera

34 plots
218 acres

Scale: 1 cm = 8 chains

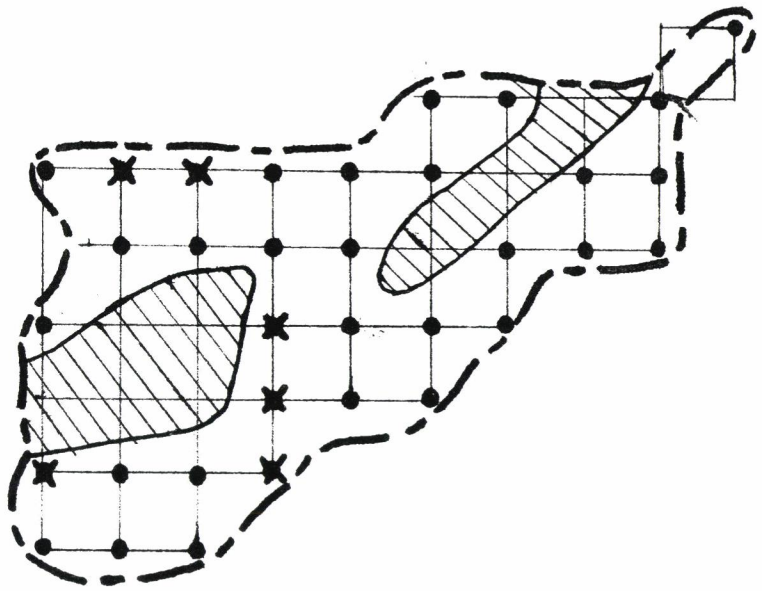


Fig. 5.--Line and plot distribution with an indication of dwarf mistletoe presence or absence; Jemez Ranger District; T18N, R3E, Sec. 15; Stand II.

LEGEND

- Plots with dwarf mistletoe
- Plots with no dwarf mistletoe
- Non-type area
- Survey area boundary

YIELDS PER ACRE OF SOUTHWESTERN PONDEROSA PINE, STAND NUMBER 10., OVERSTORY.

SITE INDEX 70

THINNING INTENSITY-- INITIAL- 43. SUBSEQUENT- 43.

STAND 10 ARCHULETA CUBA RD 76

	CHARACTERISTICS BEFORE AND AFTER THINNING								PERIODIC INTERMEDIATE CUTS				
STAND AGE (YEARS)	DMR	TREES NO.	BASAL AREA SQ.FT.	AVERAGE D.B.H. IN.	AVERAGE HEIGHT FT.	TOTAL VOLUME CU.FT.	MERCHANTABLE VOLUME CU.FT.	SAWTIMBER VOLUME BD.FT.	TREES NO.	BASAL AREA SQ.FT.	TOTAL VOLUME CU.FT.	MERCHANTABLE VOLUME CU.FT.	SAWTIMBER VOLUME BD.FT.
150	.4	44	46	13.9	67	1160	1090	4300					
150	.0+	19	16	12.4	65	380	350	1300	25	30	780	740	3000
160	.2	19	21	14.1	67	510	480	1900					
170	.2	19	25	15.4	68	630	600	2500					
							TOTAL YIELDS				1410	1340	5500

MERCH. CU. FT. - TREES 6.0 INCHES D.B.H. AND LARGER TO 4.0-INCH TOP.
BD. FT. - TREES 10.0 INCHES D.B.H. AND LARGER TO VARIABLE TOP LIMIT.
INITIAL THINNING FROM ABOVE ALLOWED IN STANDS WITH DWARF MISTLETOE.
DWARF MISTLETOE RATING ABOVE WHICH PERIODIC THINNINGS WILL NOT BE EXECUTED - 3.0.
MINIMUM CUTS FOR INCLUSION IN TOTAL YIELDS-- 1. CUBIC FEET AND 1. BOARD FEET.
ALL THINNINGS MAY BE NONCOMMERCIAL.
AT INITIAL AGE 150., 35. PERCENT OF THE TREES WERE INFECTED WITH DWARF MISTLETOE.

Table 1

YIELDS PER ACRE OF SOUTHWESTERN PONDEROSA PINE, STAND NUMBER 10., UNDERSTORY.

SITE INDEX 70
THINNING INTENSITY-- INITIAL= 60. SUBSEQUENT= 90.

STAND 10 ARCHULETA CUBA RD 76

CHARACTERISTICS BEFORE AND AFTER THINNING									PERIODIC INTERMEDIATE CUTS				
STAND AGE (YEARS)	DMR	TREES NO.	BASAL AREA SQ.FT.	AVERAGE D.B.H. IN.	AVERAGE HEIGHT FT.	TOTAL VOLUME CU.FT.	MERCHANTABLE VOLUME CU.FT.	SAWTIMBER VOLUME BD.FT.	TREES NO.	BASAL AREA SQ.FT.	TOTAL VOLUME CU.FT.	MERCHANTABLE VOLUME CU.FT.	SAWTIMBER VOLUME BD.FT.
60	.4	417	23	3.2	31	460	0	0					
70	.8	415	50	4.7	38	850	0	0					
70	.0+	286	29	4.3	36	500	0	0	129	21	350	0	0
80	.4	284	49	5.6	42	820	330	0					
90	.9	282	75	7.0	47	1310	920	0					
90	.7	275	73	7.0	47	1280	900	0	7	2	30	20	0
100	1.1	273	98	8.1	51	1780	1450	600					
110	2.0	247	109	9.0	54	2090	1810	2200					
110	1.6	187	88	9.3	55	1690	1480	2100	60	21	400	330	100
120	2.4	167	97	10.3	58	2020	1820	4300					
130	3.3	143	98	11.2	61	2170	1980	6400					
130	3.3	143	98	11.2	61	2170	1980	6400	0	0	0	0	0
140	4.1	117	93	12.1	63	2180	2010	7200					
150	4.9	92	86	13.1	65	2090	1950	7400					
150	4.9	92	86	13.1	65	2090	1950	7400	0	0	0	0	0
160	5.3	69	75	14.1	67	1880	1760	7000					
170	5.7	51	63	15.1	69	1640	1550	6500					
170	5.7	51	63	15.1	69	1640	1550	6500	0	0	0	0	0
180	6.0-	37	53	16.2	70	1400	1340	5800					
180	5.6	23	37	17.1	71	990	940	4300	14	16	410	400	1500
190	5.9	17	32	18.6	72	880	850	4100					
200	6.0-	13	29	20.1	74	800	780	4000					
								TOTAL YIELDS			1990	1530	5600

MERCH. CU. FT. - TREES 6.0 INCHES D.B.H. AND LARGER TO 4.0-INCH TOP.
BD. FT. - TREES 10.0 INCHES D.B.H. AND LARGER TO VARIABLE TOP LIMIT.
INITIAL THINNING FROM ABOVE ALLOWED IN STANDS WITH DWARF MISTLETOE.
DWARF MISTLETOE RATING ABOVE WHICH PERIODIC THINNINGS WILL NOT BE EXECUTED - 3.0.
MINIMUM CUTS FOR INCLUSION IN TOTAL YIELDS-- 1. CUBIC FEET AND 1. BOARD FEET.
ALL THINNINGS MAY BE NONCOMMERCIAL.
AT INITIAL AGE 60., 33. PERCENT OF THE TREES WERE INFECTED WITH DWARF MISTLETOE.
NOTE THAT NOT ALL SCHEDULED THINNINGS WERE POSSIBLE.

Table 2

YIELDS PER ACRE OF SOUTHWESTERN PONDEROSA PINE, STAND NUMBER 10., UNDERSTORY.

SITE INDEX 70

THINNING INTENSITY-- INITIAL- 60, SUBSEQUENT- 90,

STAND 10 ARCHULETA CUBA RD 76

CHARACTERISTICS BEFORE AND AFTER THINNING									PERIODIC INTERMEDIATE CUTS				
STAND AGE (YEARS)	DMR	TREES NO.	BASAL AREA SQ.FT.	AVERAGE D.B.H. IN.	AVERAGE HEIGHT FT.	TOTAL VOLUME CU.FT.	MERCHANTABLE VOLUME CU.FT.	SAWTIMBER VOLUME BD.FT.	TREES NO.	BASAL AREA SQ.FT.	TOTAL VOLUME CU.FT.	MERCHANTABLE VOLUME CU.FT.	SAWTIMBER VOLUME BD.FT.
60	.4	417	23	3.2	31	460	0	0					
60	.0+	355	19	3.1	29	370	0	0	62	4	90	0	0
70	.2	353	43	4.7	36	690	0	0					
80	.2	350	66	5.9	42	1100	530	0					
80	.0+	325	64	6.0	42	1050	530	0	25	2	50	0	0
90	.1	323	91	7.2	47	1580	1150	0					
100	.2	320	117	8.2	51	2140	1760	1000					
100	.0+	215	85	8.5	51	1550	1310	900	105	32	590	450	100
110	.1	214	105	9.5	55	2020	1790	2900					
120	.1	213	126	10.4	58	2650	2400	6100					
120	.0+	144	90	10.7	59	1920	1740	4700	69	36	730	660	1400
130	.1	144	108	11.7	61	2440	2240	7900					
140	.1	144	125	12.6	64	2970	2750	10200					
140	.0+	98	90	13.0	65	2170	2020	7600	46	35	800	750	2600
150	.1	98	105	14.0	67	2620	2460	9700					
160	.1	98	119	14.9	69	3070	2900	12000					
160	.0+	71	89	15.2	69	2330	2210	9200	27	30	740	690	2800
170	.1	71	102	16.2	71	2730	2600	11400					
180	.1	71	115	17.2	72	3150	3020	13800					
180	.0+	18	30	19.2	75	1030	990	4900	53	79	2120	2030	8900
190	.1	18	43	20.9	76	1250	1210	6400					
200	.1	18	50	22.5	77	1470	1440	8000					
								TOTAL YIELDS	6590	6000	23800		

MERCH. CU. FT. - TREES 6.0 INCHES D.B.H. AND LARGER TO 4.0-INCH TOP.
BD. FT. - TREES 10.0 INCHES D.B.H. AND LARGER TO VARIABLE TOP LIMIT.
INITIAL THINNING FROM ABOVE ALLOWED IN STANDS WITH DWARF MISTLETOE.
DWARF MISTLETOE RATING ABOVE WHICH PERIODIC THINNINGS WILL NOT BE EXECUTED - 3.0.
MINIMUM CUTS FOR INCLUSION IN TOTAL YIELDS-- 1. CUBIC FEET AND 1. BOARD FEET.
ALL THINNINGS MAY BE NONCOMMERCIAL.
AT INITIAL AGE 60., 33. PERCENT OF THE TREES WERE INFECTED WITH DWARF MISTLETOE.

Table 3

YIELDS PER ACRE OF SOUTHWESTERN PONDEROSA PINE, STAND NUMBER 10., UNDERSTORY,

SITE INDEX 70
THINNING INTENSITY-- INITIAL- 70, SUBSEQUENT- 70,

STAND 10 ARCHULETA CUBA RD 76

CHARACTERISTICS BEFORE AND AFTER THINNING									PERIODIC INTERMEDIATE CUTS				
STAND AGE (YEARS)	DMR	TREES NO.	BASAL AREA SQ.FT.	AVERAGE D.B.H. IN.	AVERAGE HEIGHT FT.	TOTAL VOLUME CU.FT.	MERCHANTABLE VOLUME CU.FT.	SAWTIMBER VOLUME BD.FT.	TREES NO.	BASAL AREA SQ.FT.	TOTAL VOLUME CU.FT.	MERCHANTABLE VOLUME CU.FT.	SAWTIMBER VOLUME BD.FT.
60	.4	417	23	3.2	31	460	0	0					
60	.0+	402	22	3.2	29	430	0	0	15	1	30	0	0
70	.4	400	48	4.7	36	790	0	0					
80	.8	396	73	5.8	42	1220	550	0					
80	.2	244	51	6.2	43	850	470	0	152	22	370	80	0
90	.7	243	75	7.5	48	1300	990	0					
100	1.1	242	98	8.6	52	1790	1520	1300					
100	.5	154	68	9.0	52	1260	1090	1200	88	30	530	430	100
110	1.0	153	87	10.2	56	1750	1570	3500					
120	1.4	153	105	11.2	59	2260	2070	6700					
120	.8	95	70	11.6	60	1530	1400	4900	58	35	730	670	1800
130	1.2	95	85	12.8	63	1970	1830	6800					
140	2.0	87	92	13.9	65	2230	2090	8200					
140	1.6	64	70	14.2	66	1730	1620	6500	23	22	500	470	1700
150	2.4	58	75	15.4	68	1910	1810	7700					
160	3.1	51	77	16.6	70	2020	1930	8600					
160	3.1	51	77	16.6	70	2020	1930	8600	0	0	0	0	0
170	3.8	43	74	17.8	71	2010	1930	9000					
180	4.5	35	69	19.0	73	1910	1850	9100					
180	3.5	12	28	20.5	75	780	760	3900	23	41	1130	1090	5200
190	4.3	12	33	22.4	76	950	930	5200					
200	5.1	10	32	24.1	77	940	920	5400					
								TOTAL YIELDS			4230	3660	14200

MERCH. CU. FT. - TREES 6.0 INCHES D.B.H. AND LARGER TO 4.0-INCH TOP.
BD. FT. - TREES 10.0 INCHES D.B.H. AND LARGER TO VARIABLE TOP LIMIT.
INITIAL THINNING FROM ABOVE ALLOWED IN STANDS WITH DWARF MISTLETOE.
DWARF MISTLETOE RATING ABOVE WHICH PERIODIC THINNINGS WILL NOT BE EXECUTED - 3.0.
MINIMUM CUTS FOR INCLUSION IN TOTAL YIELDS-- 1. CUBIC FEET AND 1. BOARD FEET.
ALL THINNINGS MAY BE NONCOMMERCIAL.
AT INITIAL AGE 60., 33. PERCENT OF THE TREES WERE INFECTED WITH DWARF MISTLETOE.
NOTE THAT NOT ALL SCHEDULED THINNINGS WERE POSSIBLE.

Table 4

YIELDS PER ACRE OF SOUTHWESTERN PONDEROSA PINE, STAND NUMBER 10,, UNDERSTORY,

SITE INDEX 70
THINNING INTENSITY-- INITIAL- 90, SUBSEQUENT- 70,

STAND 10 ARCHULETA CUBA RD 76

CHARACTERISTICS BEFORE AND AFTER THINNING									PERIODIC INTERMEDIATE CUTS				
STAND AGE (YEARS)	DMR	TREES NO.	BASAL AREA SQ.FT.	AVERAGE D.B.H. IN.	AVERAGE HEIGHT FT.	TOTAL VOLUME CU.FT.	MERCHANTABLE VOLUME CU.FT.	SAWTIMBER VOLUME BD.FT.	TREES NO.	BASAL AREA SQ.FT.	TOTAL VOLUME CU.FT.	MERCHANTABLE VOLUME CU.FT.	SAWTIMBER VOLUME BD.FT.
60	.4	417	23	3.2	31	460	0	0					
70	.8	415	50	4.7	38	850	0	0					
70	.4	376	43	4.6	37	730	0	0	39	7	120	0	0
80	.8	373	68	5.8	42	1160	520	0					
90	1.2	370	96	6.9	47	1690	1170	0					
90	.5	204	59	7.3	48	1050	780	0	166	37	640	390	0
100	1.0	203	80	8.5	52	1490	1250	900					
110	1.4	202	102	9.6	56	2020	1790	3100					
110	.8	128	70	10.0	57	1410	1260	2500	74	32	610	530	600
120	1.3	127	87	11.2	60	1890	1730	5500					
130	2.1	116	94	12.2	62	2170	2010	7300					
130	1.6	82	70	12.5	63	1630	1510	5500	34	24	540	500	1800
140	2.4	74	76	13.7	65	1850	1730	6800					
150	3.2	64	76	14.8	68	1940	1830	7500					
150	3.2	64	76	14.8	68	1940	1830	7500	0	0	0	0	0
160	4.0	53	73	15.9	70	1920	1820	7900					
170	4.7	43	69	17.1	71	1850	1770	8000					
170	4.7	43	69	17.1	71	1850	1770	8000	0	0	0	0	0
180	5.0	33	60	18.3	73	1670	1600	7700					
180	4.2	13	27	19.6	74	770	740	3700	20	33	900	860	4000
190	5.0	11	27	21.4	76	790	770	4100					
200	5.4	9	26	25.2	77	780	760	4300					
								TOTAL YIELDS			5590	3040	10700

MERCH. CU. FT. - TREES 6.0 INCHES D.B.H. AND LARGER TO 4.0-INCH TOP.
BD. FT. - TREES 10.0 INCHES D.B.H. AND LARGER TO VARIABLE TOP LIMIT.
INITIAL THINNING FROM ABOVE ALLOWED IN STANDS WITH DWARF MISTLETOE.
DWARF MISTLETOE RATING ABOVE WHICH PERIODIC THINNINGS WILL NOT BE EXECUTED - 3.0.
MINIMUM CUTS FOR INCLUSION IN TOTAL YIELDS-- 1. CUBIC FEET AND 1. BOARD FEET.
ALL THINNINGS MAY BE NONCOMMERCIAL.
AT INITIAL AGE 60,, 33. PERCENT OF THE TREES WERE INFECTED WITH DWARF MISTLETOE.
NOTE THAT NOT ALL SCHEDULED THINNINGS WERE POSSIBLE.

Table 5

YIELDS PER ACRE OF SOUTHWESTERN PONDEROSA PINE, STAND NUMBER 10,, UNDERSTORY,

SITE INDEX 70
THINNING INTENSITY-- INITIAL- 90, SUBSEQUENT- 90,

STAND 10 ARCHULETA CUBA RD 76

CHARACTERISTICS BEFORE AND AFTER THINNING									PERIODIC INTERMEDIATE CUTS				
STAND AGE (YEARS)	DMR	TREES NO.	BASAL AREA SQ.FT.	AVERAGE D.B.H. IN.	AVERAGE HEIGHT FT.	TOTAL VOLUME CU.FT.	MERCHANTABLE VOLUME CU.FT.	SAWTIMBER VOLUME BD.FT.	TREES NO.	BASAL AREA SQ.FT.	TOTAL VOLUME CU.FT.	MERCHANTABLE VOLUME CU.FT.	SAWTIMBER VOLUME BD.FT.
60	.4	417	23	3.2	31	460	0	0					
70	.8	415	50	4.7	38	850	0	0					
70	.4	376	43	4.6	37	730	0	0	39	7	120	0	0
80	.8	373	68	5.8	42	1160	520	0					
90	1.2	370	96	6.9	47	1690	1170	0					
90	.7	266	75	7.2	48	1320	970	0	104	21	370	200	0
100	1.2	264	99	8.3	52	1840	1520	900					
110	2.0	238	110	9.2	55	2130	1860	2600					
110	1.6	181	89	9.5	56	1770	1560	2500	57	21	360	300	100
120	2.5	161	97	10.5	59	2070	1870	4700					
130	3.3	137	97	11.4	62	2200	2020	6900					
130	3.3	137	97	11.4	62	2200	2020	6900	0	0	0	0	0
140	4.2	112	94	12.4	64	2230	2070	7600					
150	5.0	88	85	13.3	66	2100	1960	7500					
150	5.0	88	85	13.3	66	2100	1960	7500	0	0	0	0	0
160	5.4	66	74	14.3	68	1880	1770	7100					
170	5.8	49	63	15.3	70	1640	1560	6500					
170	5.8	49	63	15.3	70	1640	1560	6500	0	0	0	0	0
180	6.0-	36	53	16.4	71	1420	1360	6000					
180	5.7	22	36	17.3	72	980	940	4300	14	17	440	420	1700
190	5.9	16	31	18.8	73	860	830	4000					
200	6.0-	12	27	20.4	75	780	750	3900					
							TOTAL YIELDS		2070	1670	5700		

MERCH. CU. FT. - TREES 6.0 INCHES D.B.H. AND LARGER TO 4.0-INCH TOP.
BD. FT. - TREES 10.0 INCHES D.B.H. AND LARGER TO VARIABLE TOP LIMIT.
INITIAL THINNING FROM ABOVE ALLOWED IN STANDS WITH DWARF MISTLETOE.
DWARF MISTLETOE RATING ABOVE WHICH PERIODIC THINNINGS WILL NOT BE EXECUTED - 3.0.
MINIMUM CUTS FOR INCLUSION IN TOTAL YIELDS-- 1. CUBIC FEET AND 1. BOARD FEET.
ALL THINNINGS MAY BE NONCOMMERCIAL.
AT INITIAL AGE 60,, 33. PERCENT OF THE TREES WERE INFECTED WITH DWARF MISTLETOE.
NOTE THAT NOT ALL SCHEDULED THINNINGS WERE POSSIBLE.

Table 6

YIELDS PER ACRE OF SOUTHWESTERN PONDEROSA PINE, STAND NUMBER 1., OVERSTORY.

SITE INDEX 87
THINNING INTENSITY-- INITIAL- 47. SUBSEQUENT- 47.

STND 1 RIVERA JEMEZ 76

STAND AGE (YEARS)	DMR	CHARACTERISTICS BEFORE AND AFTER THINNING: TREES NO.	BASAL AREA SQ.FT.	AVERAGE D.B.H. IN.	AVERAGE HEIGHT FT.	TOTAL VOLUME CU.FT.	MERCHANTABLE VOLUME CU.FT.	SAWTIMBER VOLUME BD.FT.	PERIODIC INTERMEDIATE CUTS: TREES NO.	BASAL AREA SQ.FT.	TOTAL VOLUME CU.FT.	MERCHANTABLE VOLUME CU.FT.	SAWTIMBER VOLUME BD.FT.
130	.3	40	47	14.6	90	1570	1480	6000					
130	.0+	33	35	14.0	88	1170	1100	4400	7	12	400	380	1600
140	.1	33	43	15.4	91	1470	1400	5900					
150	.2	33	49	16.5	94	1740	1660	7400					
							TOTAL YIELDS				2140	2040	9000

MERCH. CU. FT. - TREES 6.0 INCHES D.B.H. AND LARGER TO 4.0-INCH TOP.
BD. FT. - TREES 10.0 INCHES D.B.H. AND LARGER TO VARIABLE TOP LIMIT.
INITIAL THINNING MUST BE FROM BELOW.
DWARF MISTLETOE RATING ABOVE WHICH PERIODIC THINNINGS WILL NOT BE EXECUTED - 3.0.
MINIMUM CUTS FOR INCLUSION IN TOTAL YIELDS-- 1. CUBIC FEET AND 1. BOARD FEET.
ALL THINNINGS MAY BE NONCOMMERCIAL.
AT INITIAL AGE 130., 28. PERCENT OF THE TREES WERE INFECTED WITH DWARF MISTLETOE.

Table 7

YIELDS PER ACRE OF SOUTHWESTERN PONDEROSA PINE, STAND NUMBER 1., UNDERSTORY.

SITE INDEX 87
THINNING INTENSITY-- INITIAL- 80. SUBSEQUENT- 90.

STND 1 RIVERA JEMEZ 76

CHARACTERISTICS BEFORE AND AFTER THINNING									PERIODIC INTERMEDIATE CUTS				
STAND AGE (YEARS)	DMR	TREES NO.	BASAL AREA SQ.FT.	AVERAGE D.B.H. IN.	AVERAGE HEIGHT FT.	TOTAL VOLUME CU.FT.	MERCHANTABLE VOLUME CU.FT.	SAWTIMBER VOLUME BD.FT.	TREES NO.	BASAL AREA SQ.FT.	TOTAL VOLUME CU.FT.	MERCHANTABLE VOLUME CU.FT.	SAWTIMBER VOLUME BD.FT.
60	.3	623	49	3.8	44	1050	0	0					
60	.0+	397	36	4.1	45	750	0	0	226	13	300	0	0
70	.1	392	62	5.4	53	1290	450	0					
80	.2	383	91	6.6	61	2040	1320	0					
80	.0+	280	73	6.9	61	1620	1120	0	103	18	420	200	0
90	.1	278	102	8.2	67	2400	1980	1000					
100	.1	275	130	9.3	72	3390	2970	4600					
100	.0+	174	89	9.7	73	2350	2090	3700	101	41	1040	880	900
110	.1	173	112	10.9	77	3180	2890	8600					
120	.1	173	134	11.9	80	4010	3690	13200					
120	.0+	65	63	13.3	82	1920	1790	6900	108	71	2090	1900	6300
130	.1	65	77	14.7	85	2460	2320	9500					
140	.1	65	91	16.0	88	3020	2870	12500					
140	.0+	18	31	17.8	90	1060	1020	4800	47	60	1960	1850	7700
150	.1	18	38	19.8	92	1350	1310	6600					
160	.1	18	46	21.6	94	1650	1610	8700					
							TOTAL YIELDS				7460	6440	23600

MERCH. CU. FT. - TREES 6.0 INCHES D.B.H. AND LARGER TO 4.0-INCH TOP.
BD. FT. - TREES 10.0 INCHES D.B.H. AND LARGER TO VARIABLE TOP LIMIT.
INITIAL THINNING MUST BE FROM BELOW.
DWARF MISTLETOE RATING ABOVE WHICH PERIODIC THINNINGS WILL NOT BE EXECUTED - 3.0.
MINIMUM CUTS FOR INCLUSION IN TOTAL YIELDS-- 1. CUBIC FEET AND 1. BOARD FEET.
ALL THINNINGS MAY BE NONCOMMERCIAL.
AT INITIAL AGE 60., 28. PERCENT OF THE TREES WERE INFECTED WITH DWARF MISTLETOE.

Table 8

YIELDS PER ACRE OF SOUTHWESTERN PONDEROSA PINE, STAND NUMBER 1., UNDERSTORY.

SITE INDEX 87

THINNING INTENSITY-- INITIAL- 80. SUBSEQUENT- 90.

STND 1 RIVERA JEMEZ 76

STAND AGE (YEARS)	DMR	CHARACTERISTICS BEFORE AND AFTER THINNING: TREES NO.	BASAL AREA SQ.FT.	AVERAGE D.B.H. IN.	AVERAGE HEIGHT FT.	TOTAL VOLUME CU.FT.	MERCHANTABLE VOLUME CU.FT.	SAWTIMBER VOLUME BD.FT.	PERIODIC INTERMEDIATE CUTS: TREES NO.	BASAL AREA SQ.FT.	TOTAL VOLUME CU.FT.	MERCHANTABLE VOLUME CU.FT.	SAWTIMBER VOLUME BD.FT.
60	.3	623	49	3.8	44	1050	0	0					
60	.0+	423	30	3.6	42	640	0	0	200	19	410	0	0
70	.1	418	59	5.1	51	1230	340	0					
80	.2	408	88	6.3	60	1960	1130	0					
80	.0+	294	70	6.6	60	1540	1000	0	114	18	420	130	0
90	.1	292	99	7.9	66	2310	1850	0					
100	.1	289	128	9.0	70	3250	2820	3600					
100	.0+	184	89	9.4	71	2280	2010	3000	105	39	970	810	600
110	.1	183	112	10.6	75	3110	2820	7500					
120	.1	183	134	11.6	79	3950	3630	12700					
120	.0+	67	63	13.1	80	1890	1760	6700	116	71	2060	1870	6000
130	.1	67	77	14.5	84	2420	2280	9200					
140	.1	67	91	15.8	86	2990	2840	12200					
140	.0+	18	31	17.7	88	1030	990	4600	49	60	1960	1850	7600
150	.1	18	38	19.7	91	1320	1280	6500					
160	.1	18	45	21.5	93	1620	1570	8500					
						TOTAL YIELDS					7440	6230	22700

MERCH. CU. FT. - TREES 6.0 INCHES D.B.H. AND LARGER TO 4.0-INCH TOP.
BD. FT. - TREES 10.0 INCHES D.B.H. AND LARGER TO VARIABLE TOP LIMIT.
INITIAL THINNING FROM ABOVE ALLOWED IN STANDS WITH DWARF MISTLETOE.
DWARF MISTLETOE RATING ABOVE WHICH PERIODIC THINNINGS WILL NOT BE EXECUTED - 3.0.
MINIMUM CUTS FOR INCLUSION IN TOTAL YIELDS-- 1. CUBIC FEET AND 1. BOARD FEET.
ALL THINNINGS MAY BE NONCOMMERCIAL.
AT INITIAL AGE 60., 28. PERCENT OF THE TREES WERE INFECTED WITH DWARF MISTLETOE.

Table 9

YIELDS PER ACRE OF SOUTHWESTERN PONDEROSA PINE, STAND NUMBER 1., UNDERSTORY.

SITE INDEX 87

THINNING INTENSITY-- INITIAL- 90. SUBSEQUENT- 100.

STND 1 RIVERA JEMEZ 76

STAND AGE (YEARS)	DMR	CHARACTERISTICS BEFORE AND AFTER THINNING: TREES NO.	BASAL AREA SQ.FT.	AVERAGE D.B.H. IN.	AVERAGE HEIGHT FT.	TOTAL VOLUME CU.FT.	MERCHANTABLE VOLUME CU.FT.	SAWTIMBER VOLUME BD.FT.	PERIODIC INTERMEDIATE CUTS: TREES NO.	BASAL AREA SQ.FT.	TOTAL VOLUME CU.FT.	MERCHANTABLE VOLUME CU.FT.	SAWTIMBER VOLUME BD.FT.
60	.3	623	49	3.8	44	1050	0	0					
60	.0+	447	41	4.1	44	840	0	0	176	8	210	0	0
70	.1	441	70	5.4	53	1470	520	0					
80	.2	429	102	6.6	62	2310	1490	0					
80	.0+	311	81	6.9	62	1820	1260	0	118	21	490	230	0
90	.1	309	111	8.1	68	2640	2150	1000					
100	.1	305	138	9.1	73	3630	3160	4400					
100	.0+	204	98	9.4	73	2610	2300	3500	101	40	1020	860	900
110	.1	203	122	10.5	77	3490	3160	8200					
120	.1	203	144	11.4	81	4350	3980	14300					
120	.0+	78	70	12.8	82	2150	2000	7500	125	74	2200	1980	6800
130	.1	78	86	14.2	86	2770	2600	10400					
140	.1	78	101	15.4	88	3380	3200	13500					
140	.0+	21	34	17.3	90	1180	1130	5200	57	67	2200	2070	8300
150	.1	21	42	19.2	93	1500	1440	7200					
160	.1	21	51	21.0	95	1840	1790	9500					
						TOTAL YIELDS					7960	6930	25500

MERCH. CU. FT. - TREES 6.0 INCHES D.B.H. AND LARGER TO 4.0-INCH TOP.
BD. FT. - TREES 10.0 INCHES D.B.H. AND LARGER TO VARIABLE TOP LIMIT.
INITIAL THINNING MUST BE FROM BELOW.
DWARF MISTLETOE RATING ABOVE WHICH PERIODIC THINNINGS WILL NOT BE EXECUTED - 3.0.
MINIMUM CUTS FOR INCLUSION IN TOTAL YIELDS-- 1. CUBIC FEET AND 1. BOARD FEET.
ALL THINNINGS MAY BE NONCOMMERCIAL.
AT INITIAL AGE 60., 28. PERCENT OF THE TREES WERE INFECTED WITH DWARF MISTLETOE.

Table 10

YIELDS PER ACRE OF SOUTHWESTERN PONDEROSA PINE, STAND NUMBER 1., UNDERSTORY.

SITE INDEX 87
THINNING INTENSITY-- INITIAL- 90. SUBSEQUENT- 100.

STND 1 RIVERA JEMEZ 76

		CHARACTERISTICS BEFORE AND AFTER THINNING							PERIODIC INTERMEDIATE CUTS				
STAND AGE (YEARS)	DMR	TREES NO.	BASAL AREA SQ.FT.	AVERAGE D.B.H. IN.	AVERAGE HEIGHT FT.	TOTAL VOLUME CU.FT.	MERCHANTABLE VOLUME CU.FT.	SAWTIMBER VOLUME BD.FT.	TREES NO.	BASAL AREA SQ.FT.	TOTAL VOLUME CU.FT.	MERCHANTABLE VOLUME CU.FT.	SAWTIMBER VOLUME BD.FT.
60	.3	623	49	3.8	44	1050	0	0					
60	.0+	468	33	3.6	42	710	0	0	155	16	340	0	0
70	.1	462	63	5.0	51	1320	0	0					
80	.2	450	94	6.2	60	2100	1160	0					
80	.0+	332	77	6.5	60	1700	1060	0	118	17	400	100	0
90	.1	329	106	7.7	66	2480	1940	0					
100	.1	325	134	8.7	70	3400	2900	3000					
100	.0+	219	97	9.0	71	2470	2140	2500	106	37	930	760	500
110	.1	218	121	10.1	75	3350	3020	6700					
120	.1	218	144	11.0	79	4220	3840	12200					
120	.0+	83	70	12.4	80	2090	1930	7100	135	74	2130	1910	5100
130	.1	83	86	13.8	83	2710	2540	9900					
140	.1	83	102	15.0	86	3330	3140	13000					
140	.0+	22	34	16.9	88	1150	1100	4900	61	68	2180	2040	8100
150	.1	22	42	18.8	91	1470	1410	6900					
160	.1	22	51	20.6	93	1810	1760	9200					
							TOTAL YIELDS				7790	6570	22900

MERCH. CU. FT. - TREES 6.0 INCHES D.B.H. AND LARGER TO 4.0-INCH TOP.
BD. FT. - TREES 10.0 INCHES D.B.H. AND LARGER TO VARIABLE TOP LIMIT.
INITIAL THINNING FROM ABOVE ALLOWED IN STANDS WITH DWARF MISTLETOE.
DWARF MISTLETOE RATING ABOVE WHICH PERIODIC THINNINGS WILL NOT BE EXECUTED - 3.0.
MINIMUM CUTS FOR INCLUSION IN TOTAL YIELDS-- 1. CUBIC FEET AND 1. BOARD FEET.
ALL THINNINGS MAY BE NONCOMMERCIAL.
AT INITIAL AGE 60., 28. PERCENT OF THE TREES WERE INFECTED WITH DWARF MISTLETOE.

Table 11

YIELDS PER ACRE OF SOUTHWESTERN PONDEROSA PINE, STAND NUMBER 1., UNDERSTORY.

SITE INDEX 87
THINNING INTENSITY-- INITIAL- 100. SUBSEQUENT- 100.

STND 1 RIVERA JEMEZ 76

STAND AGE (YEARS)	DMR	CHARACTERISTICS BEFORE AND AFTER THINNING: TREES NO.	BASAL AREA SQ.FT.	AVERAGE D.B.H. IN.	AVERAGE HEIGHT FT.	TOTAL VOLUME CU.FT.	MERCHANTABLE VOLUME CU.FT.	SAWTIMBER VOLUME BD.FT.	PERIODIC INTERMEDIATE CUTS: TREES NO.	BASAL AREA SQ.FT.	TOTAL VOLUME CU.FT.	MERCHANTABLE VOLUME CU.FT.	SAWTIMBER VOLUME BD.FT.
60	.3	623	49	3.8	44	1050	0	0					
60	.0+	505	44	4.0	44	920	0	0	118	5	130	0	0
70	.1	497	76	5.3	53	1600	520	0					
80	.2	481	107	6.4	61	2430	1470	0					
80	.0+	321	79	6.7	62	1780	1180	0	160	28	650	290	0
90	.1	318	108	7.9	68	2580	2070	0					
100	.1	314	136	8.9	72	3550	3060	3700					
100	.0+	212	98	9.2	73	2580	2250	3000	102	38	970	810	700
110	.1	211	122	10.3	77	3470	3130	7600					
120	.1	211	144	11.2	81	4340	3970	13400					
120	.0+	81	70	12.6	82	2150	2000	7400	130	74	2190	1970	6000
130	.1	81	85	13.9	85	2740	2570	10100					
140	.1	81	101	15.1	88	3360	3180	13200					
140	.0+	22	35	17.0	90	1190	1130	5100	59	66	2170	2050	8100
150	.1	22	43	18.9	93	1510	1460	7100					
160	.1	22	51	20.6	95	1840	1790	9300					
						TOTAL YIELDS					7950	6910	24100

MERCH. CU. FT. = TREES 6.0 INCHES D.B.H. AND LARGER TO 4.0-INCH TOP.
BD. FT. = TREES 10.0 INCHES D.B.H. AND LARGER TO VARIABLE TOP LIMIT.
INITIAL THINNING MUST BE FROM BELOW.
DWARF MISTLETOE RATING ABOVE WHICH PERIODIC THINNINGS WILL NOT BE EXECUTED = 3.0.
MINIMUM CUTS FOR INCLUSION IN TOTAL YIELDS-- 1. CUBIC FEET AND 1. BOARD FEET.
ALL THINNINGS MAY BE NONCOMMERCIAL.
AT INITIAL AGE 60., 28. PERCENT OF THE TREES WERE INFECTED WITH DWARF MISTLETOE.

Table 12

YIELDS PER ACRE OF SOUTHWESTERN PONDEROSA PINE, STAND NUMBER 1., UNDERSTORY.

SITE INDEX 87
THINNING INTENSITY-- INITIAL- 100. SUBSEQUENT- 100.

STND 1 RIVERA JEMEZ 76

STAND AGE (YEARS)	DMR	CHARACTERISTICS BEFORE AND AFTER THINNING: TREES NO.	BASAL AREA SQ.FT.	AVERAGE D.B.H. IN.	AVERAGE HEIGHT FT.	TOTAL VOLUME CU.FT.	MERCHANTABLE VOLUME CU.FT.	SAWTIMBER VOLUME BD.FT.	PERIODIC INTERMEDIATE CUTS: TREES NO.	BASAL AREA SQ.FT.	TOTAL VOLUME CU.FT.	MERCHANTABLE VOLUME CU.FT.	SAWTIMBER VOLUME BD.FT.
60	.3	623	49	3.8	44	1050	0	0					
60	.0+	512	38	3.7	43	810	0	0	111	11	240	0	0
70	.1	505	72	5.1	51	1490	410	0					
80	.2	489	103	6.2	60	2280	1260	0					
80	.0+	332	77	6.5	60	1700	1070	0	157	26	580	190	0
90	.1	329	106	7.7	66	2480	1950	0					
100	.1	325	134	8.7	71	3410	2910	3000					
100	.0+	219	97	9.0	71	2480	2150	2500	106	37	930	760	500
110	.1	218	121	10.1	75	3360	3020	6700					
120	.1	218	144	11.0	79	4220	3850	12200					
120	.0+	83	70	12.4	80	2090	1930	7100	135	74	2130	1920	5100
130	.1	83	86	13.8	84	2710	2540	10000					
140	.1	83	102	15.0	86	3330	3150	13000					
140	.0+	22	34	16.9	88	1150	1100	5000	61	68	2180	2050	8000
150	.1	22	42	18.8	91	1470	1420	6900					
160	.1	22	51	20.6	93	1810	1760	9200					
						TOTAL YIELDS					7870	6680	22800

MERCH. CU. FT. - TREES 6.0 INCHES D.B.H. AND LARGER TO 4.0-INCH TOP.
BD. FT. - TREES 10.0 INCHES D.B.H. AND LARGER TO VARIABLE TOP LIMIT.
INITIAL THINNING FROM ABOVE ALLOWED IN STANDS WITH DWARF MISTLETOE.
DWARF MISTLETOE RATING ABOVE WHICH PERIODIC THINNINGS WILL NOT BE EXECUTED - 3.0.
MINIMUM CUTS FOR INCLUSION IN TOTAL YIELDS-- 1. CUBIC FEET AND 1. BOARD FEET.
ALL THINNINGS MAY BE NONCOMMERCIAL.
AT INITIAL AGE 60., 28. PERCENT OF THE TREES WERE INFECTED WITH DWARF MISTLETOE.

Table 13